DOCUMENT RESUME

ED 280 985 CE 046 778

AUTHOR Turner, D. A.
TITLE Secondary Technical Education in Mexico.
INSTITUTION London Univ. (England). Inst. of Education.
PUB DATE May 86
NOTE 19p.; Paper presented at the Vocationalising Education Conference (London, England, May 7-9, 1986).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Curriculum; Developing Nations; Economic Development; Foreign Countries; *General Education; *Job Training; Secondary Education; *Secondary Schools; *Technical Education; *Vocational Education; *Workshops
IDENTIFIERS *Mexico

ABSTRACT

Technical secondary schools in Mexico can provide an invaluable service for students by moving them from the less well paid sector of the economy to the better paid sector. They are failing to attract the very poorest who cannot afford to leave work to go to school. In the three years of lower secondary education, the slightly better off students can, however, acquire a skill that will enable them to work their way through higher technical education. General and technical secondary schools share a common curriculum; all schools also have workshop subjects in the curriculum. Programs followed in workshops for technical training are also the same in technical and general schools. In contrast with a generally high level of provision of material circumstances, no state funding is available for consumable materials used in workshops. The cumulative process is one of increasing technicalization and vocationalization of general education, alongside the increased provision of technical education. This technicalization and vocationalization of secondary education is seen as one way of extending secondary education beyond a narrow elite and as a way of enriching and improving the education of the elite, to make them more responsive to the requirements of a modern society. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED280985

University of London Institute of Education
Department of International and Comparative Education

VOCATIONALISING EDUCATION CONFERENCE

7-9 May, 1986

SECONDARY TECHNICAL EDUCATION IN MEXICO

D.A. Turner

DICE/ULIE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

D. MILLS

DICE

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CE046778

BEST COPY AVAILABLE

Department of International and Comparative Education
University of London Institute of Education
20 Bedford Way, WC1H 0AL

SECONDARY TECHNICAL EDUCATION IN MEXICO**

by

D.A.Turner

Introduction

Technical education occupies an important place, and an increasingly important place, in the education system of Mexico. Technical secondary schools have been established in large numbers since 1980, when the older technical schools were rationalised into the "secondary technical sub-system". Technical schools now account for roughly one quarter of all secondary school places. These schools developed from a number of experimental schemes in the late 1970's which were designed to take full advantage of the secondary curriculum reform of 1974. This reform, among other things, introduced a major element of technical education into all secondary schools.

In making an assessment of secondary technical education, therefore, a number of diverse influences on the system must be taken into acount. The overall framework of education in Mexico, as set out in the Constitution of 1933, is socialist. Education is to be provided free for all children, irrespective of their social origins, up to the end of the lower secondary cycle, and is to promote respect for manual work.

** I am indebted to the Secretariat of Public Education and the Colegio de Profesores de Educacion Secundaria for making it possible for me to visit a large number of workshops, and gain some insight into the system of technical education.

At a more concrete level, however, it is difficult to identify this socialist influence. Mexico has not, for example, followed the Soviet Union in adopting a polytechnical theory of curriculum development, and few documents which relate to curricular development make any reference to the socialist goals of education. In talking to individual teachers one frequently finds a general expression of concern that extending education to accomodate the very poorest in society is an important objective, but at the level of curriculum theory other influences are stronger.

In the 1974 reforms, the major influence of curriculum theories prevalent in the United States is evident, particularly Bloom's classification of educational objectives. Curricula are developed in terms of aims and objectives, and of items of information which students are expected to recall, interpret, analyse, appreciate or synthesise. All curricula are set out as as series of units. Each unit has a small number of general aims which are subdivided into a number of specific teaching objectives. This has a very positive impact at the level of teaching, where students will generally start each unit by writing down the aims of the unit on which they are embarking. The students are thus directly aware of the structure of the learning process which they are experiencing.

The benefits of this form of curriculum exposition are marginally offset by the fact that not all curriculum areas fit equally well into this structure. The strain of forcing some topics into this

mould is sometimes very apparent, and a few of the results are simply absurd. However, in Mexico there are many alternatives to school which are available and attractive; dropping out is more than an academic concern, and there are a wide range of economic opportunities for young people. While child labour is not well paid, it is better paid than school attendance, and there are many self-taught electricians and motor mechanics in the workplace to demonstrate that long years of schooling do not necessarily lead to high rewards. In these circumstances, the benefits of having students who are well informed about the goals of the educational process probably outweigh any difficulties of style in presenting curricula in this way.

But the most recent and direct influence on technical secondary education is more important and more specifically Latin American. The expansion of technical education is taking place in an atmosphere of concern that education should be in accord with "social and economic reality". Just what this means in practice is more complicated to discern, since each individual can have a different view of the social and economic reality. What is clear is that the economic reality is extremely complex.

High unemployment, underemployment, and a reserve army of unskilled labour means that wages are depressed. This extends from the very poorest sectors of society who earn a living selling chewing gum and newspapers, cleaning windscreens or fire eating among the many traffic jams in Mexico City, to the semi-

skilled sector of the economy, where many uneducated people earn a living on their wits, or with a skill they have acquired through experience. At the same time, there are sectors of the economy which are more directly influenced by the United States, especially in heavy industry and domestic electrical equipment, where prices are determined by the cost of importing new equipment. Following this, labour prices in the repair and maintenance of such equipment are more closely related to those of the United States. In agriculture, a similar distinction is to be found between crops which are grown for export to the United States, and crops which are grown for domestic consumption.

Between these two formal pricing structures are a range of occupations, from building and construction workers, through a wide range of artisans and craft workers, to the provision of personal services such as hairdressing and dressmaking, where prices vary according to the purchaser rather than the goods or services provided.

In this situation, the technical secondary schools can provide an invaluable service for their students by moving them from the less well paid sector of the economy to the better paid sector. This is done by providing a range of career training workshops. In any one school as many as ten careers may be offered, but each child selects only one and follows it for three years. Although more than forty career programmes are provided for in documents produced by the Secretariat for Public Education, those which are most commonly found in urban schools are courses to prepare

electricians, carpenters, welders, secretaries, dressmakers and electronic technicians.

The acid test for such programmes is whether they attract the students who need them most. It is clear that such technical education is still failing to attract the very poorest in society. Those children who are earning a living among the traffic queues or polishing shoes cannot afford to leave their work to go to any school. But on the other hand, for those who are slightly better off, technical education can have a major impact on their life chances. Perhaps most important of all, in the three years of lower secondary education the student can acquire a skill which will enable him or her to work their way through higher technical education. Already, the phenomenon of a student who works in the morning using the skill acquired while attending the afternoon or evening shift in an upper secondary technical school or college is not uncommon. The quality of the technical education provided is making education available to a wider population than would otherwise have been able to stay in school.

Curriculum

General secondary schools and technical secondary schools share a common curriculum. Since the early 1970's, most schools have operated two shifts, morning and afternoon, although in Mexico City particularly some schools operate more than two. The shifts

may be administered as separate schools which occupy the same building, or they may be administered as a single school. If they are administered as separate schools this can extend to having separate staff, as well as separate materials and tools. In any event, the morning shift is more popular with students, and is likely to contain the students with higher marks, who have not repeated a year of schooling at any point, while the afternoon shift is likely to contain those students who cannot obtain a morning place, or who are working their way through education.

School is provided in five sessions, either mornings or afternoons, two of which are devoted to workshops for technical training. The other three sessions are used to cover a comprehensive academic curriculum including Spanish language and literature, music, social sciences, physical sciences, and mathematics and physical education. Since 1974 this has been true of **all** schools, and not only technical secondary schools. The programmes followed in the workshops are also the same in technical and general schools, although slightly more time and more staff may be devoted to workshop studies in technical schools.

Federal technical schools have workshops which are well provided with capital equipment. There is no real indication that there is a shortage of such items of equipment as lathes, typewriters, sewing machines, and welding equipment. The equipment is, however, frequently old, and teachers will often be able to point to improvements which they would prefer.

The curriculum for workshop studies is very specific. For example, the two major elements of training for electricians, apart from general electrical theory, are the wiring of houses and the rewinding of domestic electric motors. Workshops are therefore equipped with boothes which permit students to practice the wiring of domestic installations and jigs for winding field coils for motors. Such provision facilitates the provision of comprehensive practical experience for students on an individual basis. This is also facilitated by a generous staffing level in workshops, generally with two teachers taking each class of forty to fifty students.

In contrast with this generally high level of provision of material circumstances, no state funding is available for consumable materials used in workshops. This occasionally results in incongruous or even absurd outcomes. Particularly at the beginning of teaching units, students who have not bought their own materials yet can be seen, more or less idle, in well equiped surroundings. On one occasion I saw a student performing a long typing exercise on a typewriter which had no ribbon, producing a completely blank page. This cannot be regarded as entirely negative, however. In talking to teachers of workshop subjects, the discipline of making exercises relevant to student needs so that they would willingly spend their money on materials emerged as one of the primary concerns.

Beyond the practical concerns of teachers, this style of thinking is also to be found in the most imaginative aspects of the curricula set out by the Secretariat of Public Education. As in the case of the curriculum for electricians already mentioned, house wiring and rewinding electric motors are ideally judged to provide a good return for the students in the economic circumstances set out above: both occupations can command a good fee, while both can be practiced without ill efects, using materials which are virtually worthless.

As has been noted, all schools have workshop subjects in the curriculum. For general schools, which date back to before 1965, this clearly presents difficulties with facilities. In areas where it is appropriate, laboratory and workshop facilities are provided in special centres outside the schools, to provide workshop training for several general schools.

Ethos

The cumulative process which can be seen in Mexico is therefore one of increasing technicalisation and vocationalisation of general education, alongside the increased provision of technical education. In this way, one of the major pitfalls of vocationalising education which faces educational planners around the world has been avoided. Technical secondary schools offer more than general schools, leading to the same academic qualifications as general schools as well as providing a thorough grounding in a practical skill. Technical education thus has a

status which is as high as, or higher than, general education. In this it overcomes one of the major historic difficulties which has faced technical education all over the world, that technical and vocational education were viewed as banausic and substandard.

This raises a different issue, however; what, in Mexico, is the difference between technical and general education? On paper the differences are indeed slight. In practice, a number of answers are available. The first is administrative; the Secretariat of Public Education administers the general and vocational secondary schools as two distinct bureaucracies, or sub-systems. A second answer is historic, if the organisation of the technical school sub-system in 1980 can be so described. The majority of technical secondary schools are newer, their staff are younger, and have more fully internalised the objectives of the 1974 reforms.

Somewhere between these two answers are a range of subtle differences between the technical and general schools which are apparent to the observer. Technical schools place more stress on the workshop subjects, and on the integration of the workshops into the overall perspective of the school. Teachers are more likely to be concerned over the provision of consumable materials, to the extent of advising where they are cheaply available, or buying in bulk and reselling to students. This carries through to a more immediate concern that work produced should have a cash value to the individual student. And technical schools are more likely to offer a wider range of specialisations

specifically adapted to the local economic environment of the school.

This last feature is facilitated by an adminstrative structure of technical secondary schools which distinguishes four main types of technical secondary schools. There are technical schools for industry, for agriculture, for fisheries and for forestry. The last group is so small that to all practical intents and purposes it can be ignored. The other types of schools are located according to the regional development of the country. The vast majority of technical schools in the Federal District (Mexico City) are industrial. The state with the largest number of technical schools is Oaxaca, where the bulk are agricultural reflecting the rich agricultural base to the economy of that state. Even within the Federal District this strong influence of the locality can be identified, with the bulk of the technical schools being in the north, in the more heavily industrialised areas, and away from the luxurious suburbs in the south.

One interesting exception to this is a technical school in Coyoacan, where the technical school offers supplementary classes in the afternoon and evening to adults who are beyond school age. These classes are provided in up to six modules of two or three months each, with a certificate of achievement being given at the end of each module. The bulk of students are using these classes for their own personal satisfaction, rather than for any eventual economic benefit, and the atmosphere more closely resembles an evening institute in this country, with a wide range of crafts

being taught, including pottery, porcelain painting, upholstery, carpentry, wood carving, marquetry, french polishing and antique restoration. Yet even here, among the students, one comes across working furniture makers and artisans who are there to improve their understanding of technique and develop their skills.

While the general secondary schools provide technical education, this is most likely to concentrate on the three or four most popular or most generalisable careers; carpentry, turning, secretarial skills and dressmaking. The technical schools have more scope to fit to their environmental niche, and provide a wider range of careers, which collectively fit the local industrial, social or agricultural profile.

Assessment

In global terms, the technicalisation and vocationalisation of secondary education has been offered as a way of achieving diverse, and frequently conflicting, goals. In particular, it has been seen as a way of extending secondary education beyond a narrow elite. On the other hand, it has also been seen as a way of enriching and improving the education of that elite, to make them more responsive to the requirements of a modern society.

An immediate effect of this has been that technical education suffered from a lower status than general education; those who could follow general education did, while those who could not

went into secondary education. On the whole, the system of technical education in Mexico seems to have avoided this difficulty. Some of the technical secondary schools are clearly highly sought after, and technical schools are achieving a mix of ability and social background which is much wider than that observed in many other countries.

But there is the opposite danger, as with any educational innovation, that those best equiped to benefit from the new system use the facilities, while the poorer and less well prepared are excluded. There clearly is an element of this in the Mexican situation, with the very poorest failing to benefit from the technical secondary schools. But at the same time, the technical schools do offer economic advantages which are being exploited by a wider range of students than would be able to benefit from straightforward general education.

Only six years after the rapid expansion of the technical secondary schools, it may be a little early to come to a conclusive assessment. But in a number of aspects there are indications that the technical secondary schools are being successful. In the higher technical colleges, one can find students using their earlier training to pay their way through further education. Moreover, the staff in those colleges appear to welcome students from technical schools, not only because of their technical skills but also because of the high level of their general education. But in addition, in the general upper secondary schools one can find students from middle class

backgrounds who are proud of having attended technical secondary schools.

These are very considerable successes if one compares them with the largely unsuccessful centuries of effort in Europe to produce technical education which was equivalent in status to the academic secondary schools, or technical education which would appeal to both the practising technician and the middle class dilletante. And above all, these successes derive from the successful achievement of the primary goal of technical secondary education in Mexico; to match the social and economic realities of Mexico.

In the long run, the success or failure of technical schools will depend on the readiness of employers to accept the qualifications of the schools. It is also a social and economic reality of Mexico that outside the heavy industrial sector, the majority of businesses are family businesses, and being a cousin, nephew or friend of the proprietor is more important than any educational qualification. This is changing, and is likely to change more still, as this sector of the economy, the small to medium business, must be the major growth area for the rest of the century. It therefore seems likely that the technical schools are expanding at exactly the right time to meet a growing requirement in the labour market.

Certainly, morale is high among teachers in technical secondary

schools, who appear to share with officials of the Secretariat of Public Education a feeling that further expansion of the technical secondary system would be justified.

If the success of Mexican technical secondary education comes from the close match of a style of education to a configuration of political, social and economic circumstances, one should certainly be circumspect in drawing conclusions of a general nature. However, even in that, or perhaps especially in that, ability to provide a technical education which matches the perceived needs and requirements of students Mexico is now a world leader in the field of technical and vocational education.

Appendix 1

Activities for which workshops are organised
in secondary technical schools

1 Industrial, Commercial and Services

Aparadorismo	Ductos y controles
Captura de Datos	Electricidad
Carpinteria	Electronica
Ceramica	Encuadernacion
construccion	Hojalateria
Contabilidad	Industria del Vestido
Cultura de Belleza	Maquinas herramienta
Decoracion del Hogar	Mecanica automotriz
Dibujo industrial	Moledo y fundicion
Dibujo Publicitario	Sastreria
Dietista	Secretariado
Diseno Tipografico	Soldadura
Tipografia	Tapiceria
Estampado di Telas	Laboratorista clinica

Aire acondicionado y refrigeracion
Preparacion y conservacion de alimientos
Artesanias educativas en madera
Tejido mecanico de punto

2 Agricultural

Acuicultura	Apicultura
Agricultura	Pecurias

Conservacion e industrializacion de alimientos
Operacion y mantenimiento de maquinaria agricola

3 Fishery

Acuicultura continental	Acuicultura marina
Motores marinos	Pesca

Procesamiento de productos pesqueros

4 Forestry

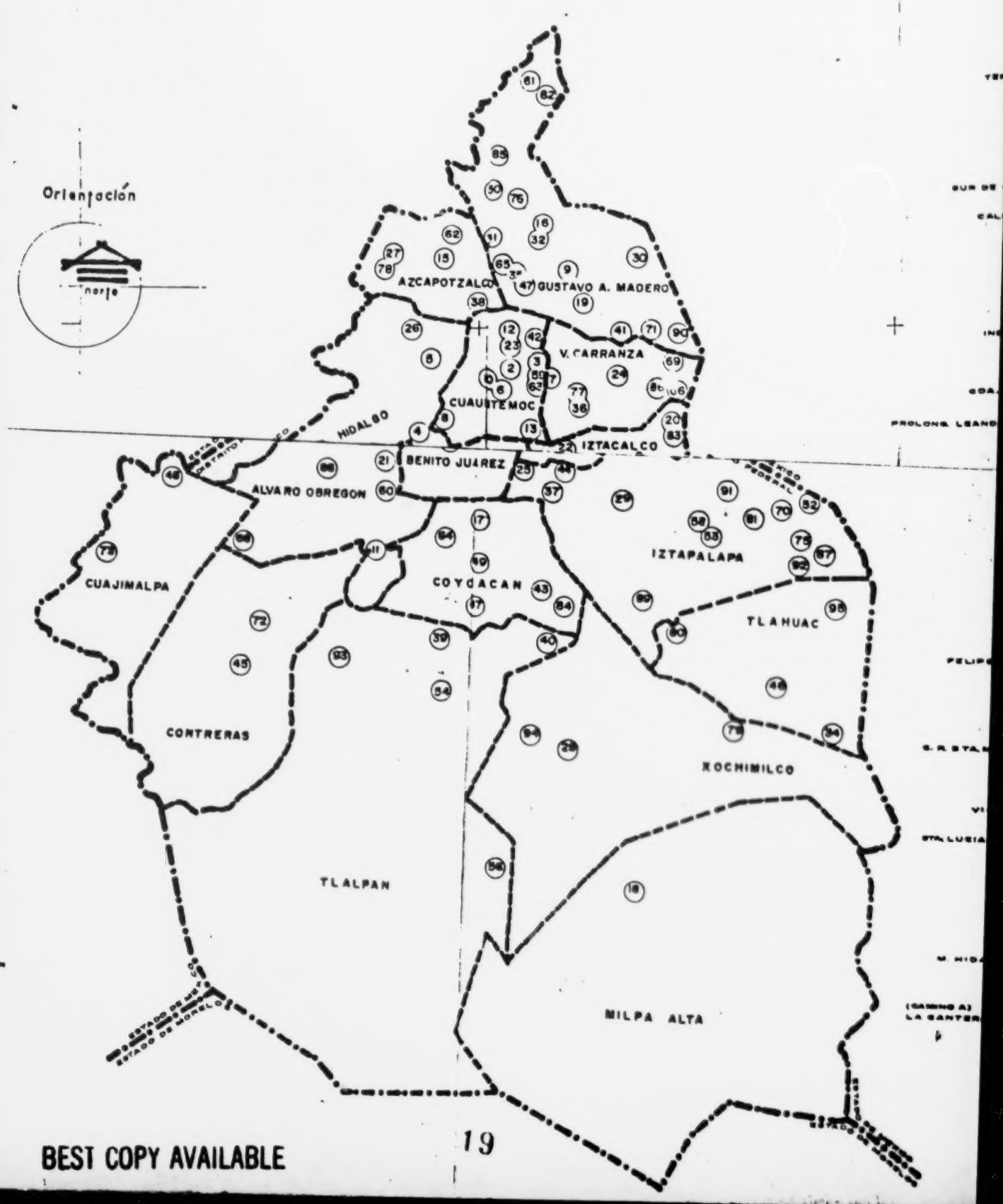
Documentador	Silvicultura

Industrias forestales
Mantenimiento del equipo forestal
Proteccion del recurso forestal

Appendix 2

Distribution of Secondary Technical Schools
in the Federal District (Mexico City)

LOCALIZACION DE ESCUELAS SECUNDARIAS TECNICAS EN EL DISTRITO FEDERAL



BEST COPY AVAILABLE